

### **REMARKS**

Responsive to the Office Action mailed November 27, 2007, Applicants have studied the Examiner's comments and the cited art. Claims 46, 89, 90 and 92-98 have been amended without prejudice. Claims 43, 44, 46, 48-54, 56-61, 64-68, 70-78, 88-90 and 92-100 are pending. Claims 43, 44, 48-54, 56-61, 64-68, 70-78 and 88 are allowed and claims 99 and 100 are objected to. Claims 46, 89, 90 and 92-98 are rejected as being obvious over the relied on prior art. Note claim 91 had been previously cancelled. In view of the following remarks, Applicants respectfully submit that the application is in condition for allowance.

#### **Claim 90 Rejection Under 35 U.S.C. § 103(a)**

Claim 90 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison (US 3,638,721) (see figure 3) or Williams et al (US 5,662,181) (see figure 3) in view of Knox (US 2,609,836) or Watkins (US 3,603,409) or Jones (US 3,443,643), with the Examiner stating:

Either Harrison or Williams et al discloses the invention as claimed **except for the valve in fluid communication with the housing opening**. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide either Harrison or Williams et al with a valve as claimed in view of the teaching of Knox, Watkins or Jones so that the pressure or/and flow rated (sic) can be effectively controlled when desired.

Contrary to applicant's argument, all that is called for by claim 20 (sic) is a housing, valve, assembly and sealing member. The "marine riser" is not recited in the claim body as part of the claimed system. When the system of Harrison or Williams et al is provided with a valve as taught by Knox or Watkins or Jones, the valve is capable of managing pressure in a marine riser as claimed. (bold added)

In response to the rejection, Applicants have amended claim 90 as suggested by the Examiner. As previously found in the preamble of claim 90 and now an element in the body of claim, claim 90 is for a system comprising "a marine riser." None of the five patents propose a marine riser – and two of the patents teach away from using a marine riser.

Neither the '721 Harrison patent nor the '181 Williams patent, which were cited by Applicants and incorporated by reference into the present application, disclose a valve in fluid communication with the housing opening to manage pressure in the now positively recited "marine riser." The Examiner has previously admitted in numbered paragraph 6 of the October 20, 2006 Office Action "that the rotating head of Harrison does not include a 'pressure relief mechanism'."

Also, the '836 Knox, '409 Watkins, and '643 Jones (filed in 1966) patents do not disclose a pressure relief mechanism to manage pressure in a marine riser. In fact, the '409 Watkins patent (filed in 1969) teaches away from use of a large diameter riser in the 1960s, wherein it states as follows:

In subsea drilling, particularly in deep water locations, the use of such large diameter risers becomes impractical because of the high stresses imposed on the riser by surface and subsea water currents, weight of the drilling fluids or mud and uncontrolled movement of the floating vessel relative to the subsea well. In order to attempt to overcome these difficulties, it has been common heretofore to try to maintain the riser in tension between the vessel and subsea well by employing expansive cumbersome devices which have not proved entirely satisfactory. In deep water subsea locations, it is desirable to eliminate the expansive and cumbersome devices referred to above. **This has been accomplished heretofore by the use of only the drill string and small diameter circulating lines connected between the subsea equipment and the drilling rig. In this arrangement, a rotating blowout preventer is provided on the top of the blowout stack provided at the well head.** (bold added)

Col. 1., lns. 15-31.

The '721 Harrison patent, also filed in 1969, confirms these technological difficulties and teaches away from using a riser, as shown in Figure 2, and instead uses a subsea rotating blowout preventer. Also see the Leach patent (US 4,813,495), filed in 1987, that teaches away from using a riser in deep water drilling with a rotating head assembly at Col. 1, lns. 10-14 and 35-40. Finally, U.S. 2,808,229 to Bauer et al., filed in 1954 (cited previously and in currently filed Ninth Supplemental IDS), discloses a subsea pressure circulating head 43 having a wood sleeve bearing without using a riser. See FIGS. 1 and 3 of the '229 Bauer patent. See *Monarch Knitting Machinery v. Sulzer Morat GMBH*, 139 F.3d 877, 885 (Fed. Cir. 1998) ("A prior art reference may be considered to teach away when 'a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.' . . . . General skepticism of those in the art – not amounting to teaching away – is also 'relevant and persuasive evidence' of nonobviousness. . . . In effect, 'teaching away' is a more pointed and probative form of skepticism expressed in the prior art. In any case, the presence of either of these indicia gives insight into the questions of obviousness.").

The '836 Knox patent (filed in 1946) fails to disclose a rotating control device. (But see Col. 8, lns. 50-66). Moreover, the '836 Knox patent does not propose a valve "to manage pressure in a marine riser." Instead a flow control valve 35 in the '836 Knox patent is to "be considered as closed, throughout all operations." See Col. 5, lns 5-9.

In conclusion, it would not have been obvious to combine the patents, and even if they were combined, none of them disclose a marine riser, much less a valve used to manage pressure in the marine riser.

**Claims 89 and 92-98 Rejection Under 35 U.S.C. § 103(a)**

**Reference II/'721 Harrison Patent**

Claims 89 and 92-98 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the April 1998 Offshore Drilling with Light Weight Fluids Joint Industry Project Presentation (Reference II on PTO-1449 filed 5/7/2004) ("Reference II") in view of Harrison, U.S. Patent No. 3,638,721 or vice versa, with the Examiner stating:

Reference II discloses a method of drilling an offshore well with lightweight fluids. On page C-9, it discloses the use of a rotating head at the top of a riser without telescopic joint.

**Reference II does not disclose the structure of the rotating head.** Harrison '721 discloses a method and apparatus for drilling an offshore well from a floating vessel as that of Reference II. However, Harrison teaches using a rotating head 22 including a housing 42 that rotatably supports a **removable seal member 40** and has an opening 60 for returning drilling fluid to the floating vessel through a flexible pipe 35. The rotatable seal member 40 is movable with an inner member 41 to sealably engage a rotatable drill string. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use of (sic) a rotating head having a structure as claimed in the Reference II in view of the teaching of Harrison.

Alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a riser in Harrison and locate the rotating head 22 above the riser as claimed in view of the teaching of Reference II.

With respect to claims 89 and 92, the "radial outward surface" still does not distinguish from the surface on which bearings 44a of Harrison are mounted. This surface is radial and outward relative to the center axis of member 41 or/and inner seal 40. The bearings 44a on the radial outward surface of the inner member 41 of Harrison are not in contact with the housing 42 as recited. **It is noted that claim 89 and 92 would define over Harrison if the "radial outward surface" is changed to – radially outwardly facing surface—**

As for claims 93-98, the flexible pipe 35 of Harrison is considered as “means for moving the drilling fluid from the riser adjacent a first level of the floating structure to a second level of the floating structure above the first level” as claimed. The “first level” is the level where the flexible pipe is connected to the riser” and the “second level” is the level of a container on the floor of the floating structure into which the drilling mud returns.

Contrary to applicant’s argument, when Reference II is modified to include a rotating head 22 of Harrison, drilling fluid will flow from an opening in the riser and/or above the surface of the ocean to a second level on the floating structure as recited.

In response to applicant’s argument based upon the age of the references, contentions that the reference patents are old are not impressive absent a showing that the art tried and failed to solve the same problem notwithstanding its presumed knowledge of the references. See *In re Wright*, 569 F.2d 1124, 193 USPQ 332 (CCPA 1977).

In response to applicant’s argument that the examiner’s conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant’s disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). (bold added)

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All of the claims rejected (89 and 92-98) are in independent form. The Office Action admits that “Reference II does not disclose the structure of the rotating head,” and attempts to fill the gap by combining Reference II with the method and apparatus of Harrison. Even if it was obvious to combine the disclosures of the April 1998 Reference II and Harrison, filed almost thirty (30) years before the April 1998 Reference II, which Applicants do not admit, as shown below, Reference II and Harrison fail to teach or suggest a rotating control head in which a housing receives an inner member and an outer member as in Applicants’ amended claims 89 and 92.

Applicant submits that the elements of the relied on prior art in combination do not merely perform the function that each element performs separately. In particular, only Reference II proposes a rotating head for replacing a diverter or on top of a diverter (above the rotary table)

for offshore drilling with lightweight fluids. As discussed above, the '229 Bauer patent, the '495 Leach patent, the '409 Watkins patent and the '721 Harrison patent teach away from using a marine riser and instead position a subsea rotating head (below the surface of the ocean) above the wellhead. The '643 Jones patent (see Col. 4, Ins. 5-18), the '186 Murray patent, and the '181 Williams patent propose rotating heads – but none for use with a marine riser, much less a floating rig.

#### Claims 89 and 92

As suggested by the Examiner, claims 89 and 92 have been amended so that none of the bearings contacting the “radially outwardly facing” surface of the inner member, i.e., the Harrison bearings 44, are in contact with the housing. As admitted, Reference II does not disclose the structure of the rotating head and the '721 Harrison patent discloses bearings 44 (contacting the radially outwardly facing surface of inner element 41) being in contact with housing 42.

Therefore, Reference II and Harrison, alone and in combination, fail to teach or suggest all of the elements of Applicants' claimed subject matter. For these reasons, Applicants respectfully request withdrawal of the rejection of claims 89 and 92.

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#### Claim 93-98

Neither the Reference II or the '721 Harrison patent disclose a first seal and a second seal as now claimed in amended claims 93-98. As admitted, Reference II does not disclose the structure of the rotating head. While the '721 Harrison patent disclose a seal 40 (see Harrison FIG 3 and col. 2, Ins 50-69), neither reference discloses the amended claimed subject matter. See FIG. 3 of published application along with paragraphs 30 and 32 for passive and/or active seals 39 and 42.

Therefore, Reference II and Harrison, alone and in combination, fail to teach or suggest all of the elements of Applicants' claimed subject matter. For these reasons, Applicants respectfully request withdrawal of the rejection.

#### **Claims 46, 89, 92 and 98 Rejection Under 35 U.S.C. § 103(a)**

#### **Reference II in View of '181 Williams Patent or '186 Murray Patent**

Claims 46, 89, 92 and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reference II in view of Williams et al (U.S. Patent 5,662,181) or Murray et al (U.S. Patent 4,157,186) (sic), with the Examiner stating:

Reference II discloses a method of drilling an offshore well with lightweight fluids. On page C-9, it discloses the use of a rotating head at the top of a riser without telescopic joint. **Reference II**

**does not disclose the structure of the rotating head.** However, either *Williams et al* '181 (see figure 3) or *Murray et al* '186 (see figures 1-7) disclose a rotating head including a housing that rotatably supports a removable assembly that includes an inner member, a radially outwardly disposed outer member, a plurality of bearings interposed between the inner and outer members in order to facilitate removably mounting the bearing assembly in the housing while drilling or servicing the well (column 2, lines 36-42 in *Williams et al* or column 6, lines 1-4 in *Murray et al*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use of (sic) a rotating head having a structure as claimed in the Reference II in view of the teaching of *Williams et al* for the advantages pointed out above.

Contrary to applicant's argument, the assembly of Reference II as modified by *Williams et al* or *Murray et al* inherently "manages pressure on the drilling fluid" when the seal in their rotating blowout preventer sealingly engages the drill string while the drill string rotates during the course of drilling a borehole.

Again, when Reference II is modified to include a rotating head 22 of Harrison, drilling fluid will flow from an opening in the riser and/or above the surface of the ocean to a second level on the floating structure as recited. (Emphasis added).

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**Amended Claims 46, 89, 92 and 98**

U.S. Patent No. 4,157,186 to *Murray et al.* proposes that to continue drilling after penetrating a high pressure formation, it is necessary to seal the top of the well casing respective to the drill string. A rotating blowout preventer 10 is proposed in the '186 *Murray* patent to sealingly engage the drill string to isolate the annulus formed between the borehole and the drill string from ambient. (*Murray*, col. 1, lns. 11-20). However, the *Murray* rotating blowout preventer teaches that the drilling mud in the annulus flows from a lateral outlet flow passageway (diverter) in the housing of the rotating blowout preventer (*Murray*, col. 6, lns. 30-35) – not to manage pressure of the fluid while the tubular is drilling. (See also '181 *Williams* patent, col. 3, lns. 45-50). The teachings of the '181 *Williams* patent and the '186 *Murray* patent, simply divert the drilling fluid from the rotating control device. The use of a rotating control device or blowout preventer, as claimed in the present invention, allows the operator to keep drilling while managing the pressure of the drilling fluid. To combine the riser Reference II with the riserless '181 *Williams* patent, and/or with the riserless '186 *Murray* patent where the '229 *Bauer* patent, the '495 *Leach* patent, the '409 *Watkins* patent and the '721 *Harrison* patent confirm the technological difficulties with risers.

Further, amended independent claims 46, 89, 92 and 98 now include the limitation of a flexible conduit. Because Reference II, the '186 Murray patent and the '181 Williams patent do not disclose a flexible conduit, much less a flexible conduit between a floating rig and a riser, as discussed above, claims 46, 89, 92 and 98 are allowable.

Applicant submits that the elements of the relied on prior art in combination do not merely perform the function that each element performs separately. In particular, only Reference II proposes a rotating head for replacing a diverter or on top of a diverter (above the rotary table) for offshore drilling with lightweight fluids. As discussed above, both the '409 Watkins patent and the '721 Harrison patent teach away from using a marine riser and instead position a subsea rotating head (below the surface of the ocean) above the wellhead. The '186 Murray patent, and the '181 Williams patent propose rotating heads – but none for use with a flexible conduit or marine riser, much less a floating rig. In the present application, pressurized fluid is communicated to a floating drilling rig by a flexible conduit to accommodate relative movement of the fixed riser and the moving floating rig.

*Alza Corp. v. Mylan Laboratories, Inc.*, 464 F.3d 1286, 1289-1290 (Fed. Cir. 9/6/2006).

“[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of argument reliant upon *ex post* reasoning.” *KSR Int'l Co v. Teleflex*, 127 S. Ct. 1727, 82 USPQ 2d at 1397.

Therefore, amended claims 46, 89, 92 and 98 are not obvious in view of the relied on references and allowance is requested. Claims 99 and 100 depend directly from claims 46 and 89, respectively. Since amended claims 46 and 89 are allowable, claims 99 and 100 are allowable.

#### **ALLOWABLE SUBJECT MATTER**

Claims 43, 44, 48-54, 56-61, 64-68, 70-78 and 88 are allowed. Claims 99 and 100 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### **NINTH SUPPLEMENTAL IDS**

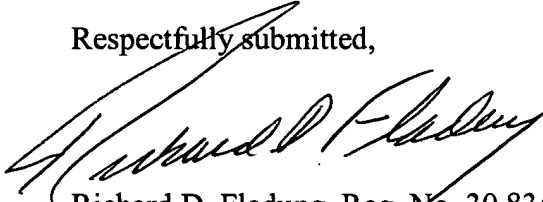
A Ninth Supplemental IDS (referred to above) is filed concurrently herewith. Consideration of the cited references and initialing of each reference is respectfully requested.

**CONCLUSION**

Applicants respectfully submit that all issues and rejections have been adequately addressed, that all claims are allowable, and that the case should be advanced to issuance.

If the Examiner has any questions or wishes to discuss the claims, Applicants encourage the Examiner to call the undersigned at the telephone number indicated below.

Respectfully submitted,



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